CONVENTIONAL ARMAMENT TECHNOLOGY AREA PLAN

INTRODUCTION

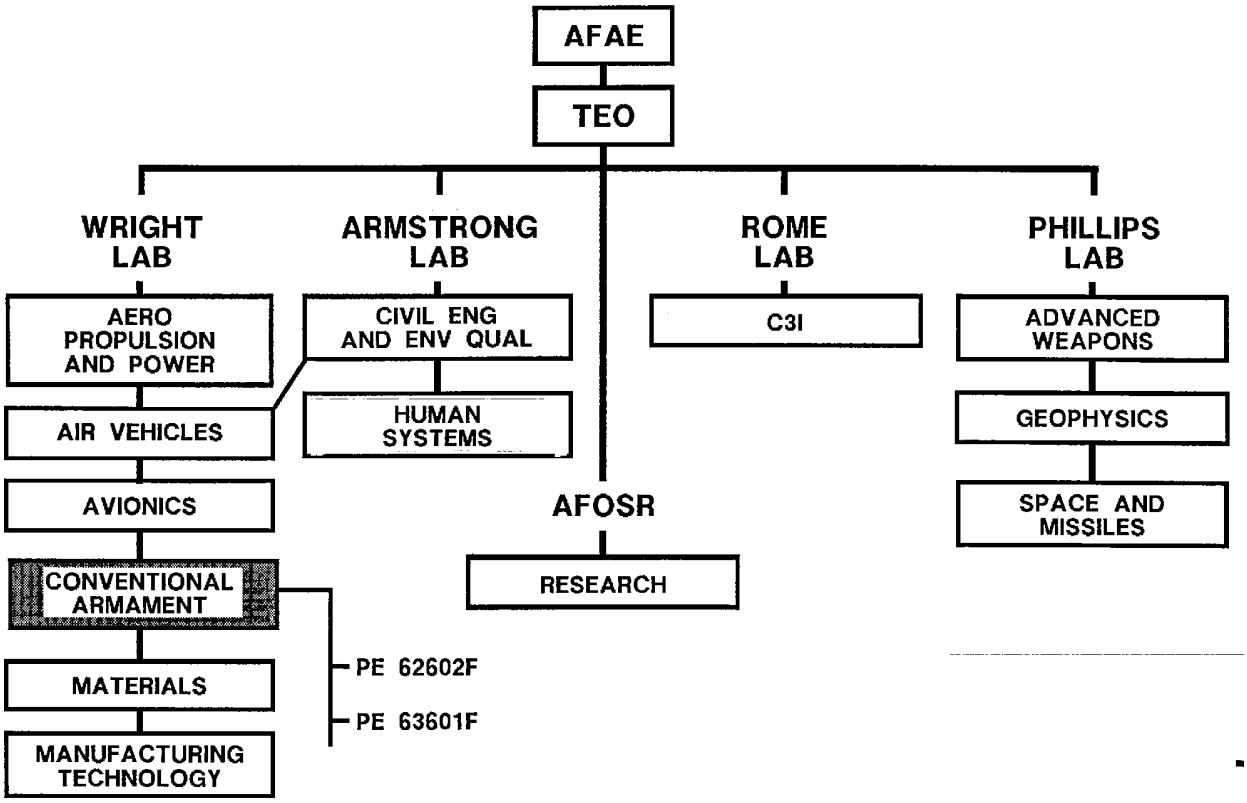

FIGURE 1. AIR FORCE SCIENCE AND TECHNOLOGY PROGRAM STRUCTURE

Background

The Air Force Materiel Command organization for Science and Technology (S&T) is depicted in Figure 1. Within this structure, Conventional Armament S&T is carried out by the Armament Directorate at Eglin Air Force Base (AFB), FL. We have two Program Elements (PE) as shown. The primary role of the Armament Directorate is to perform research and development to transition conventional armament technologies that meet our customers' needs. Figure 2 illustrates the FY96 Conventional Armament investment compared to the overall Air Force S&T budget. Conventional Armament is less than six percent of the S&T budget excluding National Aerospace Plane (NASP) and Joint Advanced Strike Technology (JAST) funding.

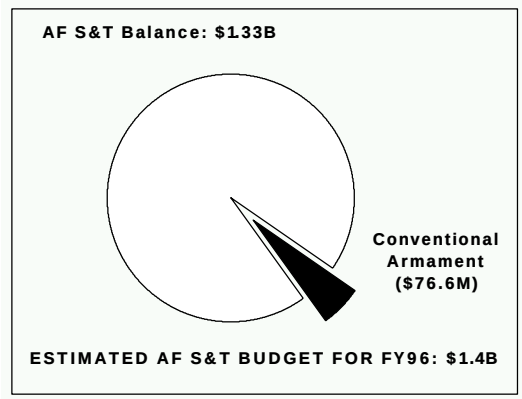

FIGURE 2. CONVENTIONAL ARMAMENT S&T vs AIR FORCE S&T

The fundamental technology areas or major thrusts for Conventional Armament are shown in Table 1.

Table 1. Major Technology Thrusts

1. **Advanced Guidance**
2. **Ordnance**
3. **Instrumentation Technology**

These thrusts encompass a broad spectrum of technologies that form the basis for enabling new/innovative concepts for air-launched weapons. **To relate User's Needs to conventional armament technology, the thrust descriptions begin with an abbreviated listing of combat user needs extracted from Mission Area Plans and other requirements documents. These needs are expanded and highlighted in boldfaced type in the "Goals" section along with the technologies being pursued to solve the needs.** The thrust descriptions conclude with accomplishments last year, program changes, and milestones for the future.

Figure 3 is the apportionment of AF Science and Technology (S&T) conventional armament funding for the three major thrusts.

The Advanced Guidance Thrust develops terminal seekers and guidance systems for weapons to provide them with precision guidance. Accomplishments during the past year include advancements in high speed processing of target imagery, the reduction in seeker component costs, as well as captive flight testing of advanced Synthetic Aperture Radar (SAR) and Laser Radar (LADAR) seekers.

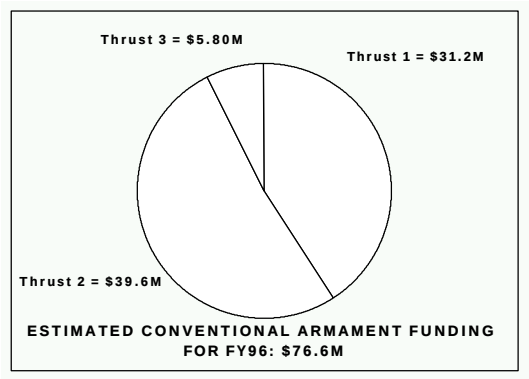

FIGURE 3. MAJOR TECHNOLOGY THRUSTS

Also, advancements were made in the the technologies to prevent/reduce jamming effects on weapon Global Positioning System (GPS) receivers. The Ordnance Thrust is responsible for the development of explosives, warheads, fuzes, weapon airframe controls and carriage and release equipment and receives the largest share of the Conventional Armament S&T budget. Major advancements in the development of insensitive explosives and fuzes were accomplished in the past year. This Instrumentation Thrust is concerned with the development of new test instrumentation to reduce weapon test costs and improve test data collection. Major accomplishments in subminiature telemetry and high speed video data collection were made during the past year. Technology assessments are conducted in all of these thrusts to provide program managers insight into critical design issues and to ensure that the technologies are focused to satisfy the user's requirements. All funding figures reflect the FY96 President's Budget Request, and the programs described in this plan are subject to

change based upon possible Congressional action.

Relationship to Other Technology Programs

Our thrusts are coordinated with the other 12 technology areas of Air Force S&T. Special attention is placed on maintaining a close relationship with areas that are vital to armament development such as materials, avionics, air vehicles, and aero propulsion and power. This awareness ensures our thrusts can benefit from work performed in these areas.

To keep abreast of technologies, we participate in joint programs, data exchanges, and technical interfacing with other Air Force organizations, Services, government agencies, National Laboratories, industry, and foreign countries. We maintain an interface and support programs carried out by these organizations so that we can leverage their technical expertise and fill our technical gaps. We also maintain a working relationship with aircraft System Program Offices (SPOs) to provide them with technologies for new weapons, missile launchers and bomb release units for advanced aircraft. Together we work to support each other so that the SPO and our technology needs are met.

We leverage our technologies with the commercial sector where possible. The Advanced Guidance and Instrumentation Technology thrusts develop radars, thermal imagers, processors, and other electronic components that have a large commercial base. We can therefore contract most of our efforts out while conducting some in-house research. Where there is limited commercial interest such as in the explosives, warheads, and fuzes area, we conduct much more in-house research and expend more resources than private industry to advance this technology. We also draw upon the aircraft industry technology base for airframes, inertial measurement units (IMU), and autopilots; therefore, we can effectively leverage our resources in this area.

The Armament Directorate has implemented a broad based technology transfer program. Outreach to industry, patenting, marketing and cooperative efforts are all a part of the directorate program. We are actively involved with industry through Cooperative Research and Development Agreements to promote the commercialization of Subminiature Telemetry, High Speed Imaging, and Nonthermal Silent Electric Discharge technologies. The Armament Directorate is an active member of the Gulf Coast Alliance for Technology Transfer for the purpose of assessing and commercializing our technologies.

The Directorate has several International Exchange Agreements with foreign countries around the world. The primary emphasis is in the ordnance area with a value of approximately $1.5 million. A number of joint tests were completed last year and more are scheduled for the coming year.

Changes from Last Year

A major change from last year is the elimination of the Weapon Flight Mechanic's Thrust. This was a consolidation activity with the technologies inside the Weapon Flight Mechanics Thrust supporting navigation and control now being conducted under the Advanced Guidance Thrust. The technologies which directly supported the Ordnance Thrust are now being conducted under that thrust.